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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,465	07/11/2006	Joel B. Christian	07194.011IU2	1924
23859 7590 08/07/2009 Ballard Spahr Andrews & Ingersoll, LLP SUITE 1000 999 PEACHTREE STREET ATLANTA, GA 30309-3915				
EXAMINER				
HAN, KWANG S				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/550,465

Applicant(s)

CHRISTIAN, JOEL B.

Examiner

Kwang Han

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2009.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
4a) Of the above claim(s) 1-9 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 10-16 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 26 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date 11/8/07, 5/20/08
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

TUNGSTEN-BASED ELECTROCATALYST AND FUEL CELL CONTAINING SAME

Examiner: K. Han SN: 10/550,465 Art Unit: 1795 August 7, 2009

Election/Restrictions

1. Applicant's election with traverse of Group III, Claims 10-16 in the reply filed on May 21, 2009 is acknowledged. The traversal is on the ground(s) that a serious search burden would not exist for the different inventive groups. This is not found persuasive because a search query would involve different search strategies including text search, classification search for each of the inventive concepts.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 1-9 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. (US 2002/0111267) in view of Broyde et al. (US 3507701).

Regarding claim 10, Christian is directed towards a PEM fuel cell [0025] comprised of a tungsten-based catalyst for the anode but is silent towards a cathode comprised of a tungsten-based catalyst.

Broyde teaches a fuel cell cathode which comprises tungsten based catalyst [Abstract] because it has been found to be an effective cathodic reduction catalyst (2:19-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a tungsten based catalyst for the cathode in the fuel cell of Christian because Broyde teaches it has been found to be an effective cathodic reduction catalyst for a fuel cell.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. and Broyde et al. as applied to claim 10 above, and further in view of Tseung et al. (US 5470673).

The teachings of Christian and Broyde as discussed above are herein incorporated.

Regarding claim 11, Christian discloses the tungsten containing fuel cell catalyst to be dispersed on carbon black [0024] but is silent towards the electrocatalyst to be $H_{0.52}WO_3$.

Tseung teaches a fuel cell catalyst (1:8-17) comprised of hydrogen tungsten bronze (H_xWO_3) (8:4-8) because it speeds up the rate of hydrogen oxidation. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a hydrogen tungsten bronze catalyst material in the fuel cell of Christian and Broyde because Tseung teaches it speeds up the rate of hydrogen oxidation.

Regarding claim 12, Christian discloses a loading of about 20% by weight of the tungsten by weight on the carbon [0041].

Regarding claims 13-16, Christian discloses a PEM (proton exchange membrane) fuel cell separated by a polymer membrane of a perfluorosulfonic acid polymer (nafion, etc.) and using hydrogen as a fuel and air as an oxidant [0005, 0035-0043].

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang Han whose telephone number is (571) 270-5264. The examiner can normally be reached on Monday through Friday 8:00am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. H./
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795